MEDICAL EXAMINER.

DEVOTED TO MEDICINE, SURGERY, AND THE COLLATERAL SCIENCES.

No. 11.] PHILADELPHIA, SATURDAY, MARCH 13, 1841. [Vol. IV.

ORIGINAL COMMUNICATIONS.

On the Value of Gastrotomy and Gastro-hysterotomy in Obstetrics. By Jos. Warrington, M. D.

Of the various resources within the reach of the accoucheur in the practice of the art of delivery, that which involves an extensive incision into the cavities of the abdomen and uterus, with a view to remove thence a child which could not, without the certainty of its own destruction, and in many cases the imminent risk of the mother, be extracted through the natural passages, appears to have been thought of, and under certain circumstances acted upon, from a period almost coeval with the history of the race of man.

Without stopping to inquire, whether Mercury did, as is said, extract the son of Jupiter from the belly of Semele—whether Esculapius was delivered in the same way by the surgical skill of Apollo—whether the operation has been entitled the Cæsarean operation, because one of the Cæsars was removed from the abdomen and uterus of his mother by gastro-hysterotomy, or whether the name of Cæsar was given to the subject of this mode of delivery, we propose to pass almost immediately to the consideration of the questions—

1. What are the objects of this operation?
2. What are its dangers?
3. To what particular cases is it applicable?
4. At what particular period of labour should it be performed?
5. What is the best method of performing the operation,—1, with regard to the instruments; 2, the particular part of the abdomen and uterus in which the incision should be made; 3, the manner of dressing the wounds through which the fœtus has been extracted?

The object of this operation is to extract a living child from the uterus or abdomen of a mother who has succumbed to some fatal accident previous to the delivery of the fruit of conception, whether this accident has occurred during labour, or some time previous to it. It has also for its object, to save the lives both of mother and child in those cases in which there are insuperable obstacles to the passage of the latter through the pelvis of the former. The necessity for this mode of delivery should of course depend upon the fact of the os uteri and other soft parts being in a state of great rigidity, or the pelvis so contracted as not to permit the ready exit of the fœtus through it, or, as relates to the child, of its situation in the uterus being such that its delivery could not be safely accomplished by the forceps, or by version and extraction by the feet.

Considering the circumstance that version by the feet is to be regarded as an operation always dangerous to the child, and that extraction by the head with the forceps in those cases in which there are no uterine or voluntary efforts on the part of the mother, must subject the fœtus to risk of injury, if not of immediate destruction of its life, we should regard delivery through the parietes of the abdomen not only the most expeditious, but also the most safe for the child.

When the death of the mother has ensued from rupture of the uterus, and the child is known to have passed into the cavity of the abdomen, there can be no hesitation as to the preference of gastrotomy over any other mode of delivery. The only question of importance involved is whether the child be still alive, and at how remote a period after the accident we might hope or reasonably expect to find its vitality preserved.

The existence of vitality in the child could perhaps be settled in many instances by auscultation, and although we might expect its death to occur in a short time after that of the mother, instances have been met with which prove that in some cases life is preserved several hours. Thus, Bordenave gives a case of the extraction of a living fœtus at sixth month of gestation, from the uterus of a woman who had died about six hours previously; and Gardien tells us of an instance in which a living child was removed, by the Cæsarean section, from the uterus of the mother, forty-eight hours after her death,—and further, that at the autopsy of the Princess Pauline of Schwarzemberg, who died of the effects of a scald at the fête of her brother-in-law, the Austrian ambassador at Paris, it was found that her fœtus was still alive, though her body was not opened until the day following.

The observations of Blundell in the few cases he has seen or collected, would tend to fix the limits of the vitality of the fœtus in utero at a much shorter period than those above mentioned. In the case in which his assistance was demanded, the abdomen of the woman was laid open thirteen minutes after the last respiration, and the child removed in two minutes more. By the use of proper means, the child shortly after began to respire.

Should auscultation fail to give any indications of the life of the fœtus, we think it would still be proper to resort to the operation for extraction, unless the period from the death of the mother had elapsed by several hours; and we

think the operation would be especially indicated if the death of the mother had occurred suddenly, from any other cause than copious hæmorrhage; for although the sounds, and other evidences of the fœtal circulation, may at the time be absent, persevering efforts at resuscitation have often been successful in seemingly desperate cases. In the case under the notice of Mr. Tomkins, of Yeovil, the fœtus, after laying in a state of suspended animation more than an hour by his watch, was resuscitated by artificial respiration.

It will of course be of the utmost importance to determine the actual death of the pregnant woman before attempting an operation of so extensive a nature upon her person, as that intended for the removal of her child through the parietes of her uterus and abdomen. It is known that there are conditions of the system simulating death, from which the patient may completely recover.

In cases of great doubt as to the real occurrence of death in the mother, the question may properly be started, whether, since in case of real death, or the long continuance of suspended animation in the mother, the life of the fœtus is hazarded by any delay for the usual means of resuscitation, admitting that artificial delivery by the natural passages is impossible, are accoucheurs justified in proceeding at once to that operation which, while it gives a strong chance for the security of the life of the child, jeopardizes that of the mother?

Gastrotomy and gastro-hysterotomy have doubtless been performed on the female after death from the earliest periods of history, and as the operation involved no risk or suffering of the mother, and afforded a chance for the preservation of the child, no important obstacle opposed it under such circumstances. Notwithstanding the inference which may be drawn from the language found in the Nidda, a work regarded as an appendix to the Jewish Talmud, "that it is not necessary for the woman to observe the days of purification, after the removal of the child through the parietes of the abdomen," we might even suppose that the Cæsarean section had been practised upon the living female, and that she, in some cases, at least, recovered from the consequences of it; yet, we have no authentic cases of the performance of this operation upon the living female until about the year 1500, when Jacques Nufer, of Siegerhausen, opened the abdomen and uterus of his own wife after many fruitless attempts to deliver her through the natural passages, and thence extracted a living child, sewed up the wound, which united without any bad symptoms, and thus saved both his wife and child from imminent destruction.

Although this operation has had numerous opposers, some of whom have desired to substitute for it the use of the crotchet, and other instruments destructive of the life of the child, and more or less dangerous to the mother; and others have, without due consideration, highly recommended the Sigaultian operation, or symphysiotomy in all cases where the defects of the pelvis were so considerable as to render impracticable the passage of the child entire, or in a state of mutilation, through it, yet the operation of gastro-hysterotomy and gastrotomy has had its vindicators, and has been performed with somewhat variable success in different parts of the world, on the dead mother in early ages, and certainly on both living and dead since the bold and successful adventure of Nufer, about three hundred and fifty years ago. While Parè, Guillemeau, Marchand, Mauriceau, Sacombe, Osborn, and others, decidedly opposed the performance of this operation upon the living mother, Roussel, Weidmann, Bordenave, Baudelocque, and Hull, have collected numerous cases, which certify that the operation has been approved of and executed by numerous surgeons and accoucheurs of great respectability. Without entering here into the merits of the practice of the induction of artificial premature delivery, in certain cases of deformity of the pelvis, it may be sufficient for our present purpose to say that gastro-hysterotomy is positively demanded in those cases in which a woman arrives at term with a fœtus in utero, but with a pelvis so contracted, or with some other obstacle so insuperably interposed, as to render delivery impossible by the natural passages. It becomes a question of grave importance in case the child is living, and the diameters of the pelvis are so reduced as barely to admit of its passage in a state of infanticidal mutilation, and by such manipulation as must subject the mother to the hazard of her life.

The results of crotchet deliveries are so rarely the subjects of record, that statistics of them are very meagre, and we are therefore at a loss to compare them with what is known respecting the results of delivery through the parietes of the abdomen. One thing, however, is certain, that, abating the constant risk to which mothers are exposed, and the consequent death which some of them are known to suffer, no children are delivered by the crotchet in a state fit to live, however many of them, to the horror of the operator, may struggle for existence at the moment they are extracted, and while yet within the grasp of his fatal instrument.

We see, therefore, that while we consider obstetric operations in difficult cases, not amenable to the use of his forceps, restricted to the use of the perforator and crotchets, in all cases in which the fœtus is alive at the time of labour, the accoucheur deprives his country certainly of the prospective services of one citizen, at the same time that the parent is subjected to more or less risk of health, if not of life.

From the fact that we are unable to lay hold of the details of all the cases which have been reported in the collections by Hull, Baude-

locque, and others, we are limited much within our wishes to make out such statistics as might contribute greatly to settle several questions of much interest to the community, as well as to the accoucheur. Dr. Hull, of Manchester, has collected accounts of one hundred and fifty-five cases previous to the year 1799. Of these a minute history is not always given, although some of them are narrated in considerable detail.

Of the women subjected to this operation, one hundred and twelve recovered, while forty-three others died.

Of the children of the women who recovered, forty-one are recorded to have been alive, while seven were saved, of the women who died. Many of the reports are silent on the subject of the condition of the child at the time of the operation.

Of seventy-three cases collected by Baudelocque, as having occurred between 1750 and 1800, thirty-one of the operations were performed with success to the mother, and almost all of them with success to the child; that amongst those women who could not be saved, there were several of whom no hopes were entertained before the operation, and others who appear to have been the victims of causes foreign to it, as sufficiently well-grounded hopes were entertained of them till the moment when these causes exerted their disastrous influence.

Simon relates sixty-four operations, more than one-half of which had been done on thirteen women. Some of these had undergone the operation once or twice; others, five or six times. There was one woman in particular who had undergone it seven times, and always with success.

If to these results, obtained entirely upon authority derived from the Eastern hemisphere, we add also what has been extracted by Bordenave from the Embryologia Sacra of Cangiamila, we shall greatly enlarge the amount of success, so far as relates to the preservation of the child, by stating that in the city and vicinity of Montreal, in the space of twenty-four years, twenty-one living children had been extracted by the Cæsarean operation: that between the year 1704 and 1748, sixty children had been extracted in the same manner at Caltanissecta, of whom only five were found dead: that at Victoria, a city in the diocese of Syracuse, between the years 1734 and 1752, the Cæsarean operation had been performed twenty times, and in every case a living child extracted; and that at Sambuca, a city in the diocese of Girenti, twenty-two pregnant women having died, from eighteen of them children were extracted alive.

If we add to these the cases collected by Dr. Nancrede, as having occurred in the United States, viz. one case of gastrotomy in 1792 in New York by Dr. M'Knight—one in Ohio by Dr. Richmond—one by Drs. Dougal and Vanvalrah in 1827, and another in 1832—one at Nassau, New York, by Drs. S. M'Clellan and Bassett, in the year 1823—several successful ones by Dr. Prevost of Louisiana, and on one patient several times—one by Dr. Nancrede in 1834, and again on the same patient under care of Drs. Fox and Meigs, in 1838, both of which last operations were completely successful; we shall have a large list of the cases of gastrotomy and gastro-hysterotomy, which have been recorded in the annals of the profession of medicine. Of the operations done in this country, I am not able to say that any of them have succeeded except perhaps those of Dr. Prevost, and certainly those of Nancrede and Fox.*

Having now seen that the Cæsarean section has been performed in a great many cases, in some of which it was doubtless the only expedient which could be resorted to with the view to effect delivery, and having seen that of those who have been the subjects of the operation, some die, and some escape, and become the subjects of subsequent operations of a similar kind, it is proper for us to inquire into the sources of the *danger* of this extensive abdominal incision.

The opponents of this operation seem to fear hæmorrhage, which they say must result from so extensive an incision into parts so vascular as some portions of the abdominal parietes, and particularly in that portion of the uterus with which the placenta has its peculiar connexion. Granting that the incisions may be made into such portions of the abdominal parietes as may be supplied by arterial branches of considerable magnitude, there could be little difficulty in securing them by the use of the needle and ligature.

Suppose, however, that the plexus of blood-vessels, both veins and arteries, which carry blood to and from that part of the uterus to which the placenta is attached, should lie so directly under the incisions just made, as to require that the operator cut through them in the division of the uterus; a free discharge of blood would of course be the immediate consequence; but as the child is soon extracted, and the uterus contracts, these vessels are supposed to be occluded, and rarely, if ever, to require a ligature. Is there not danger that the uterus may relax, and give out so much blood as to exhaust the patient, and that too by the secret effusion of the vital fluid into the cavity of the abdomen?

We think this might become a source of great danger, and even of fatality, to the sub-

* For an account of all that is known respecting the operation in this country up to the time that Mrs. Raybold, of this city, submitted to it, for the first time in 1834, see a very interesting paper in the American Journal of Medical Sciences, No. 32, August, 1835, by Dr. Nancrede; and for the report by Dr. Fox, of the 2d operation, see same periodical, No. 43, May, 1838.

ject of this operation. The testimony of most observers appears, however, to be that the hæmorrhage is small, rarely exceeding six or eight ounces, and scarcely ever more than that incident to natural labor.

Death rarely follows very soon after the operation, unless the patient be moribund at the time of its performance.

Since, then, the fatality of this operation does not appear to depend upon hæmorrhage, or on a severe shock to the nervous system causing tetanic convulsions, where are we to look for the destructive disorganization which results in the death of the whole animal machine?

Surgeons are mostly inducted into practice with a dread of incising the serous investments of any cavity, whether articular or visceral, and hence would look with horror upon the longitude of one required for the delivery of a child through the abdominal parietes. Such was the insuperable dread which pervaded the mind of the father of American Surgery in this respect, that he persisted in his objections to the performance of the Cæsarean section in a case in which delivery by that mode was, in the opinion of many, most clearly indicated.

But is it the effects of an incision into the peritoneum which we are most to dread, and are we justifiable in allowing that fear to deter us from a prompt interposition, and an attempt to save the mother and child, when the latter is known to be alive, and its delivery through the natural passages, without mutilation, impossible?

How often is the peritoneal sac opened by accident, or by a surgical operation, and healed up without bad consequences?

The researches of Blundell into the effects of wounds penetrating the cavity of the abdomen, have led him to the following presumptive inferences.

1. That smaller wounds of the peritoneum, as in tapping, hernia, &c., do not in general induce fatal peritonitis, or other destructive effects: and therefore the common opinion, not perhaps found on paper, but frequently urged in conversation, and apparently operative in practice, that inflammation in a spot of the peritoneum, will almost invariably diffuse itself over the greater part of it, is probably unfounded in truth.

2. That extensive divisions of the peritoneum are certainly not *of necessity* fatal, whether by inflammation or otherwise, and probably not generally so.

3. That the womb, spleen, and ovaries may be taken away, certainly without of necessity destroying life, and, *presumptively*, without generally destroying it.

4. That the womb, when developed from pregnancy, may be torn open; that the child may escape into the peritoneal sac, amongst the viscera; and that the mouth of the womb may be torn off—not, indeed, as far as these cases may be relied upon, without great danger, but twice in severe cases without death.

5. And, generally, that the peritoneum and abdominal viscera, though very tender in the human body, will, without fatal consequences, bear more injury, than, from their modes of practice, British (and, I may add, our older American) surgeons especially seem disposed to admit.

We may with great propriety inquire, as suggested by Denman, whether death is occasioned by any disease with which the patients were afflicted before the time of labour, or whether it is the consequence of the state to which the patients were reduced from the occurrence of labour before the operation was performed; or whether it be the inevitable consequence of the operation.

In reference to the unfortunate results of the operation in Great Britain, he remarks, that death happened at different periods, but not one died while being operated upon, or immediately after it. No convulsions were brought on by incisions, nor does it appear that any of them sunk through the loss of blood, accompanying or succeeding the operation.

Some died within twelve, others at the end of twenty-four hours, and a few on the third day after the operation. If we may judge of the cause of death from the period at which it occurred, it might be said that in those who failed within twenty-four hours, it was probably owing, not to the operation alone, but to the violence of this, combined with that of the previous disease; but when they survived twenty-four or forty-eight hours, their death might be attributed to the succeeding inflammation in a body previously disposed to disease.

If we had the liberty of selecting a patient on whom to try the merits of this operation, we certainly should not choose one who was either very much distorted, or who had the mollities ossium, or who was evidently under the influence of some dangerous disease, or who had been several days in labor, because the event must very much depend upon the state of the patient at the time of the operation.

While we are ready to make a general concession to the views of Denman, and are apprehensive with Blundell that in many cases of death after the Cæsarean section, have depended upon a cachectic state of the system affected with mollitis ossium, yet, if we make an analysis of the cases furnished by Hall, we shall find several instances of complete recovery after the patient had been subjected to severe but unavailing contractions of the uterus when the operation was attempted. Thus in a table of 110 successful operations, it is ascertained by the accompanying reports, that one patient had been in labour two days; three, three days; four, four days; one, five days; one, seven days; two, *several days*, and one "very long."

We are told also that before Nufer operated on his own wife she had been several days in labour, and many fruitless attempts had been made to deliver her, so that she must have been

in a state of much excitement, and apparent unfitness for the operation, yet not only she recovered but her child was removed alive. In the case in which the labour had continued seven days, the patient had been subjected to the unsuccessful use of the crotchet. Her recovery however was without accident.

In the case of Alice O'Neil, of Ireland, operated upon by Mary Donnally, the patient had been in labour twelve days, yet she was able to walk from home on the 27th day after the unsurgical operation to which she had been subjected.

Jane Foster, upon whom gastrotomy was performed in consequence of rupture of the uterus, from distortion of the pelvis, after having been in labour *five* days had the wound healed in six days, and was able to resume her usual employment at the end of twenty days.

Several of the successsful cases enumerated in Dr. Hull's collection, had been subjected to the Cæsarean section in consequence of pelvic deformity from ricketts.

These cases serve to show that success sometimes accompanies the operation, even under very unpromising circumstances.

As very little blood is usually lost by this operation; as few or no instances are known of convulsions arising from a shock to the nervous system by so extensive an incision into the abdomen, we may ask what is the source of danger in this operation?

It appears to be pretty generally agreed, that in cases which terminate fatally, if the patient do not speedily sink from exhaustion induced by the previous disease or the severity and duration of her labour, added to the shock of so extensive an incision, she rarely succumbs until the peritoneum becomes extensively inflamed. And it is perhaps this diffused inflammation of the peritoneum which is to be most dreaded.

How can the operator guard against the risk of the occurrence of this accident?

Without knowing precisely what stimulus it is, which excites this inflammation, when the operation has been performed skilfully and with sharp insruments, some surgeons have attributed it to the action of atmospheric air, or at least to its contact with this sensative membrane at a reduced temperature. Mr. Lizars, a surgeon of considerable experience in abdominal wounds, whether accidental, or designed, gave as his opinion that, with a view to obviate the dangers, from the exposure of the peritoneum to an atmosphere of depressed temperature, the apartment in which the operation was to be performed should be warmed to above 90 degrees of Farenheit's thermometer, and hence not many degrees below the temperature of the internal parts of the body. In order completely to avoid the contact of atmospheric air with the peritoneal surface, Dr. Aitkin inquires, "whether the performance of this operation under the surface of the tepid water, by secluding the atmospheric air, would not tend to diminish it fatal effects."

Some experiments by Dr. Haighton on this point would seem to settle this question negatively. He opened the abdomen of different animals to a considerable extent, closing them during the immersion, and applying to the cut edges of the abdominal wound, as soon as it was raised above the water, an adhesive composition, by which, and a bandage, the external air was excluded.

"No symptoms indicating internal inflammation supervened, and perfect health was soon restored. After the lapse of some weeks, these animals were subjected to anatomical examination, which showed that *an adhesion of the omentum* to the cut edges of the peritoneum had made that cavity complete." Dr. Hull says, Haighton afterwards repeated these experiments in the open air, all the other circumstances being similar, and the event of them agreed precisely with the former. Not content with this mode of experimenting, he reversed it by injecting air with a syringe into the cavity of the peritoneum of dogs, introducing it through the tumica vaginalis testis. "From different trials which were made in this manner," he says, "I do not hesitate to conclude that atmospherical air, penetrating into cavities, is perfectly harmless and has no influence over the consequences of the Cæsarean operation."

Allowing the merits of these experiments, observations and opinions, and conceding that while some females have recovered from the operation who have been horribly deformed by ricketts and worn down by a tedious and unavailing labour of several days, and that the abdominal and uterine incisions have in some of these cases been made after every other manipulation, and even thd crotchet had been resorted to without effect, while other patients have died in a short time after this operation, although they were previously in good health and had been in labour little more than 24 hours, we may very naturally inquire whether the result of the case depends as much upon any peculiar skill in the operator as upon the great tenacity of life which some constitutions appear to possess.

Some very striking instances of recovery have occurred under circumstances apparently unfavourable, and with what might be regarded, if not bad, certainly very indifferent surgery. Of the former class may be noticed the case of —— Brument, in the district of Candebec, in the department of the Lower Seine, æt. thirty-nine, mother of several children, in the eighth month of her pregnancy. She received a blow from the horn of a bull in July, 1789, which opened the hypogastric region transversely, and the anterior part of the womb to the extent of more than ten inches. She was in the fields at the time at considerable distance from home. The child immediately passed through this extensive laceration, which was attended with a prodigious loss of blood. The

persons present being alarmed by her situation, durst not attempt to relieve her before the arrival of Lechaptois, a surgeon a league and a half distant, and contented themselves with wrapping the infant, which was alive, in an apron, without dividing the navel string,—so that more than an hour and a half passed before she obtained any assistance. Lechaptois began by dividing the funis imbilicalis to separate the child from the mother, who was in such a feeble state that her pulse could scarcely be perceived. He then extracted the placenta through the wound, the womb being contracted and the hæmorrhage restrained. He afterwards cleaned the intestines and the adjacent parts, which were covered with blood and earth, by means of a sponge moistened in wine and water, replaced them, made eight stitches of the quilled suture, and covered the whole with a suitable dressing and bandage. The woman was then carried home. The child lived eight hours. The woman in six weeks was completely cured. Five years afterwards she enjoyed very good health, and has only suffered from a hernia in the part where two of the stitches had divided the lips of the wound.

There are on record at least two cases of self-operation by the Cæsarean section, one a negro woman in Jamaica, who, in 1769, tired out with the pains of labour, took a broken butcher knife, about two inches and a half of which remained attached to the handle, and with this made an incision in her left side, near the linea alba, and so deeply as to wound the right thigh of the child, who escaped through the abdominal opening by its own struggles, followed by a considerable portion of the intestines, which were pushed back by a negro midwife, who was sent for to her assistance. After a few hours had elapsed, the surgeon of the plantation, supposing the old woman had left some dirt in the wound, cut open the stitches that had been made, carefully washed the parts clean, extracted the placenta at the wound, and then stitched it up again. This woman was able to attend to her work in six weeks.

A mulatto girl, residing at Nassau, delivered herself in 1823, of twins, by making an incision through the parietes of the abdomen and uterus, and recovered from her wounds, which were dressed by Drs. S. M'Clellan and Bassett.

The first case of Cæsarean section which the records of Great Britain afford us, was performed by Mary Donnally, a midwife, on the person of Alice O'Neil, near Charlemont, in Ireland. This intrepid *chirurgiene-accoucheuse* made her incision with a razor, extracted the child, and held the wound while a messenger was despatched a mile distant for some silk and tailor's needles, with which she sewed up the wound, and then smeared it with whites of egg. This Alice O'Neal recovered in twenty-seven days. Other cases could be cited, tending to show that some women recover from the operation, although little claim can be laid to great surgical skill in the performance of it.

We have already stated that the want of correct statistics of the results to the mother of embryulcia deprives us of the opportunity of making any comparison of the value of the Cæsarean section, and embryotomy in certain cases of impracticable labour. We are, however, strongly inclined to the belief that, could the catalogues of disasters in both modes of delivery be spread fully before us, the preponderance of benefits would be less in favour of the crotchet, admitting the child to be alive at the time of the operation, than we have hitherto supposed.

Second Report of Cases of Deformed Feet, treated without the Division of Tendons, with a description of the Apparatus employed. By Heber Chase, M. D., of Philadelphia.

In deformities of the feet, whether there exist an inversion or eversion, the same principles will apply to their treatment. In these cases, whether the foot has advanced to the first, second, or third degree of *varus*, as described by authors, the first step towards a restoration, consists in bringing the distorted foot into the same axis with the leg. This we have accomplished by means of an instrument represented in fig. 1. It consists of two parts, a brass splint, (*a*,) and a steel plate, (*b*,) connected by means of a malleable iron neck, (*f*,) which can be bent, by considerable force, but will not yield to the power necessary to act upon the foot. The utility of this arrangement will be readily understood by the operator, because, in order to act to the greatest mechanical advantage upon the foot, the plate is required to be placed at different angles with the splint in different stages of the progress of restoration. The steel plate should be one inch in width for an adult, two lines in thickness, and extend to a distance equal to the interval between the ankle-joint and the ends of the toes.

Fig. I.

In cases of inversion of the foot, the brass splint is applied to the outside of the leg. It should embrace one-third of the circumference of the limb, and should extend from just below the knee to the upper part of the external malleolus. It is secured to the limb by the straps, (*d*, *d*.)

By means of this apparatus, the foot is brought outward towards the steel plate as far

as possible, without occasioning much pain, and is then confined by the strap, (*e*,) which is thrown around the foot, and passed through the fenestræ, (*c*, *c*.)

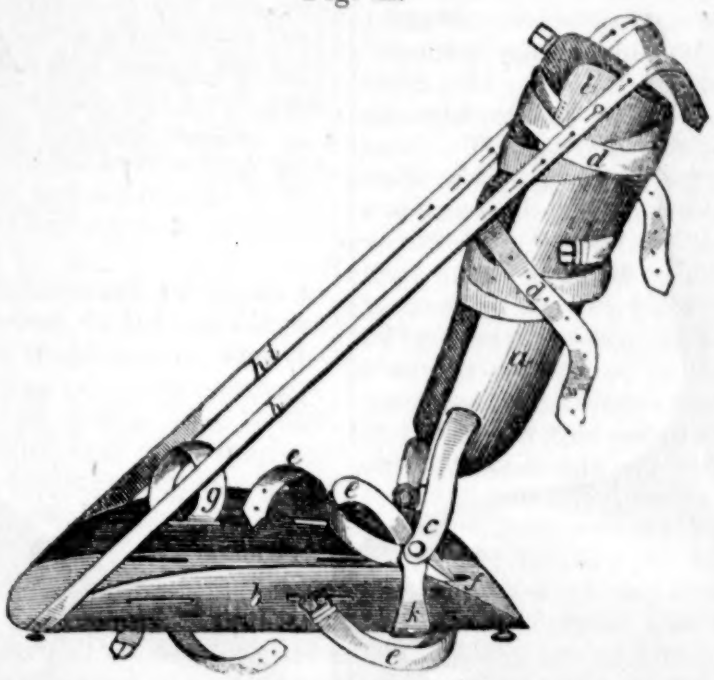
In the progress of the restoration of the foot, the strap surrounding it requires to be drawn more firmly from time to time, as will be mentioned in the report of cases.

In *eversion* of the foot, the brass splint is to be adjusted to the *inner side of the leg*, when the same principles will apply as in *inversion*.

The use of this instrument must be continued until the foot is brought into the same axis with the leg, and until the disposition to a return of the deformity has ceased.

The second indication to be fulfilled is to effect the proper flexion of the foot. This we have accomplished by means of the instrument represented in fig. II.

Fig. II.



It consists of a plate of brass, (*a*,) moulded to fit accurately to the back and sides of the leg, and extending from immediately below the knee to just above the malleolus. A second piece (*b*) formed to act as a sandal or shoe, equal in length, and a little wider than the foot. These are attached by a hinge, (*c*, *k*,) so as to admit of flexion and extension. The leg is secured in the brass splint, by straps, (*d*, *d*.) The foot is secured to the shoe by a strap, (*e*,) which is thrown around the instep, then passes through a fenestra behind the heel, and the extremities being reverted, are returned over the instep, where they are secured by a buckle. There is also a strap, (*g*,) intended to pass around the foot near the toes, in order to draw it outward, when flexion is being made. The fenestræ at the right and left of *b*, are for the passage of straps, when the instrument is employed in cases of eversion of the foot. *h*, *h*, are two straps for approximating the extremities of the instrument. *l*, a knob for securing the straps.

By examining the instrument itself, it will be seen, that the appendage marked *k*, does not clasp the shoe firmly, but stands out from it to the distance of half an inch on each side. This appendage passes beneath the shoe, and is attached by its centre, at a spot just anterior to the fenestra, (*f*,) by a universal joint with a limited motion. By means of this arrangement, when it becomes desirable to produce some degree of abduction of the foot in cases of inversion, this object may be accomplished by drawing the strap *h i*, more firmly than its fellow.

The leg is to be placed in the brass splint *a*, the foot in the shoe *b*, the leg is secured by the straps *d d*, the heel kept down by the strap *e*, and if desirable, the loop of the strap *g*, thrown around the foot in cases of varus, to produce partial abduction.

During the progress of restoration, the straps *h i*, and *h*, are to be drawn, from day to day, more tense, as the foot yields to the action of the instrument.

In deformities of the feet varying from those above mentioned, the instrument employed, will be described in connection with the cases.

CASE I.—*David Canning Smith aged* 17 *years —Congenital inversion of the right foot, of the worst variety—supposed to have arisen from a blow during Utero-Gestation—Brought to a direct linewith the leg by abduction, in two weeks—Flexed to the position seen in Fig.* IV, *in twenty days, by mechanical means alone.*

The young gentleman who is the subject of this case, although of the age above mentioned, possesses a frame of unusual size and developement. His father is a remarkably powerful, robust, and healthy man, while his mother, on the conrtary, is of small stature. They have had nine children, all of whom, with the ex-

ception of David, are well formed in their limbs.

Five weeks previous to her confinement the mother accidentally received a blow on the abdomen from one of her daughters, and the child was not felt to move for several days as it had done before.

On the birth of the infant his right foot was inverted to a considerable degree, and the skin, as stated by the mother, exhibited a dark livid appearance over the external malleolus.*

The parents at this time resided in the vicinity of Dublin, where the child was taken at an early age, and attempts were made to restore the limb, but every thing proving ineffectual, the case was abandoned, and the foot soon assumed the position seen in Fig. III.

Fig. III.

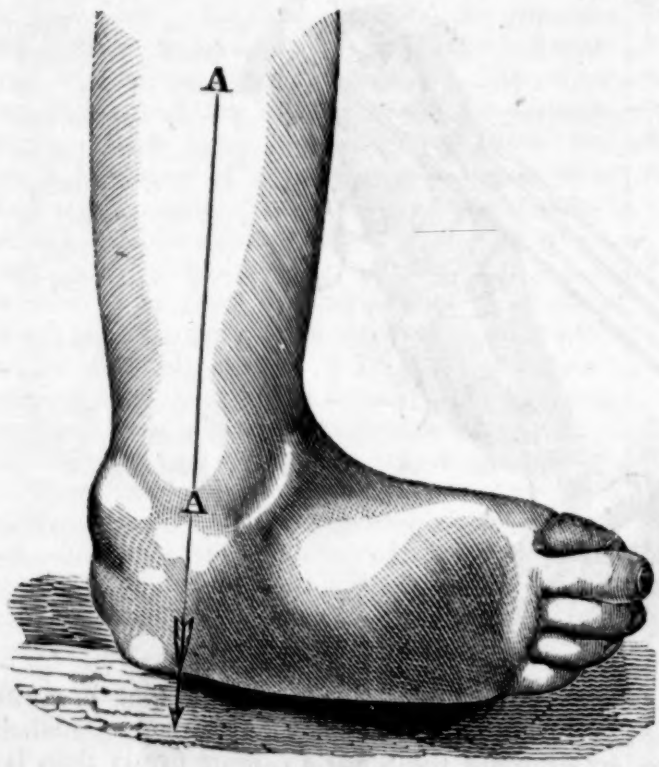


Fig. IV.

At the usual age he began to walk—was always active; and at the time I first saw him, which was in the early part of the month of September, 1840, he was engaged as a salesman in a house of business in this city.

His foot was so far inverted that the toes pointed directly toward that of the opposite side, and so rotated that he walked on the outer side of the foot, which had formed for itself a perfect cushion upon which it rested, turning backward, while the heel was elevated a little more than an inch, a circumstance which necessarily follows the inversion and rotation of the foot to the extent spoken of by writers, under the head of *varus* of the third degree. This elevation of the heel, however, becomes restored whenever the foot is brought to the same axis with the leg, followed by flexion. He had no direct command over the

*It is a well known fact that many ingenious theories, and speculations have been advanced to explain the cause of deformities of the feet.

Independent of the case cited above, I have lately treated a child of eight months old, in which an inversion of both feet of the worst variety existed, attributed by the mother to the following cause:—

When in the fifth month of her pregnancy, while walking upon the flat of the house, she accidentally slipped, and fell with her feet doubled under her, which gave her considerable pain for several hours.

The idea that her child might have deformed feet immdiately seized upon her mind; and her mental anxiety was in a few days heightened by the circumstance of a carpenter's coming into the neigbourhood who had an inverted club-foot, and who was employed in finishing a house on the opposite side of the street, just in view of her parlor windows; and to use her own expression, "I never could look into the street but I saw the man with the club-foot."

A few weeks ago I attended a young woman in her first confinement, whose infant was born with double calcanean club-feet.

The dorsa of the feet were thrown backward upon the lower part of the leg—the left, making a strong impression in the sub-cutaneous fat, and cellular tissue along the tibia. The soles of these feet were convex transversely, and to some extent, antero-posteriorly; in short, they had the appearance of having been moulded into the concave surface of a sphere.

The child is healthy, and in every other respect well proportioned, and no external cause can be assigned for this mal-formation.

foot, not even as much as to enable him to move his toes.

As is usual in these cases of deformity, though, perhaps, not to so great a degree in all, the foot was two inches shorter than its fellow, but well proportioned. Its circumference, embracing the heel and the instep, was one inch less—at the hollow, three-fourths—while just posterior to the toes, it was of the same measurement as the foot of the opposite side.

The leg was half an inch shorter than its fellow, wanting development at the calf, and has always been of a lower temperature than the other extremities, so that during the cold weather in winter he has for two years past found it difficult to keep the limb warm.

There was no defect in the knee, except that it was a little smaller, and no change in the position; but its patella had a greater mobility than that of the other.

On the 22d of September, 1840, I began to abduct the foot by means of the instrument described (Fig. I.) and employed as there directed, drawing the strap (*e*) more and more tense from day to day; and in two weeks brought it into the same axis wtih the leg. This instrument was continued three weeks, until, by its constant action, the toes were made to evert, as is observed in a well directed foot when planted on the ground; which action was continued until all disposition of the foot to return to its original position had ceased.

Flexion was now begun, and in twenty days from the time of the application of the instrument (see Fig. II.) the foot was brought to assume the position seen in Fig IV.

January, 1841.—This patient is now able to walk with comparative ease. The temperature of his foot has become natural, and has improved during treatment in proportion as the foot was restored; and the motion at the instep is also daily increasing. The rigidity which formerly existed in the fascia plantaris and adductor tendons, has subsided.

In consequence of the regularly graduated power which was employed in the restoration of the foot, but little pain was experienced during the treatment; and this was felt only on the right side of the foot in abduction, and at the instep in flexion; not any whatever in the tendo Achilles, nor has this tendon been rendered unusually tense by mechanical efforts upon the foot.

March 4th.—The patient can abduct, adduct, or extend this foot as readily and freely as the other; he can also flex it, and elevate his toes four inches. This motion of the foot allows tolerably free action in walking, but the flexion will daily improve as the foot acquires its full power.

The arch of the foot is higher than its fellow, but not so regularly formed as if no deformity had ever existed—as will be seen by reference to Fig. IV.

He can walk the distance of a mile with little or no fatigue, nor does he limp or hesitate in his movements.

He has been treated throughout in presence of my class last winter; and several medical gentlemen have examined the foot since its restoration.

CASE II. *Congenital Calcanean Club-foot of the left side; restoration of the foot to a natural position by mechanical means, in twenty days.*

On the 13th of July, 1840, J. B. H., Esq., of this city, requested me to see his little son, a healthy, robust child, four weeks old, and whom I found to have a deformity of the left foot—(calcanean club-foot of the worst variety.) The deformity is congenital—no cause can be assigned for it. Mrs. H. is the mother of several children, all of whom are perfect in their limbs, nor can there be traced a deformity either in the paternal or maternal branches of the family, both of which are numerous.

The dorsum of the foot was drawn upward, in such a manner as to rest firmly upon the lower part of the front of the leg, whilst an obliquity caused the small toe to rest on a line with the inner side of the leg. See Fig. V.

Fig. V.

From the tender age of the child, it was not to be expected that much rigidity of the misplaced parts could have taken place as yet; therefore, the foot could be brought nearly to its true position, by moderate force applied to it by the hand, whilst the leg and ankle were supported; but returned immediately to its distorted position when these efforts ceased.

There was some want of development in the foot and leg generally, when compared with its fellow; and at the lower part of the leg, where the dorsum of the foot rested upon it, the subcutaneous fat and cellular tissue were

to a considerable degree wanting, and the leg, when the foot was elevated, presented a perfect cast of the dorsum of the foot.

For the relief of this deformity, I applied to the outer side of the leg, for the purpose of bringing the foot not only downward, but inward, an instrument extending from the knee to the bottom of the foot similar to that represented in Fig. I, with the plate *c*, bent at a right angle with the splint at *f*, and secured by the straps *b b*. The foot was then brought down to half the distance required for restoration, and secured by a roller passing round it and through the fenestræ.

For a few days I saw this patient daily, afterwards, less frequently. At each visit I adjusted the instrument when necessary, bringing the foot nearer to the required degree of extension and eversion until the second of August, when it was brought to a correct position as seen in Fig. VI., and remained so when the instrument was removed.

Aug. 15th. The patient has apparently suffered very little from the dressings. Not even an abrasion of the skin has followed the use of the instrument, and the child enjoys all the proper motions of the foot with perfect freedom.

Fig. VI.

October 16th, 1840. This little patient has been able, for several days past, to stand even upon his feet.

Case III.—*Congenital Inversion of the Right Foot, of the worst variety—(Varus of the third degree)—Treated with Complicated Machinery for several months, with little or no effect.—Restored in thirty-one days by a simple apparatus.*—Early in the autumn of 1839, my attention was called to Samuel M'Kee Chambers, ætat. 2, who had a complete inversion of the right foot. He was walking upon the outer edge of the foot, which had formed for itself a perfect cusion, upon which it rested—the sole turning backward whilst the toes pointed directly toward the opposite ankle. See Fig. VII. In addition to this inversion of the foot, there was a defect in the knee joint, permitting the leg to revolve upon the thigh, to the extent of one-fourth of a circle, and by the application of some force, the toes could be made to point directly backward. This seemed to be owing to a change in the cartilages of the joint, and the relaxation of the capsular and other ligaments. The leg itself was somewhat smaller than its fellow, but the thigh appeared of its natural dimension.

As soon as an apparatus could be prepared, I adjusted it to the foot of the child, and kept it in constant use, until May, 1840, when finding that very little progress had been made towards a permanent restoration of the foot, and that the patient was very unwilling to wear the machine, the instrument was laid aside. The leg, however, had commenced increasing in size—the knee had acquired some strength, and the limb was brought partially to its true position.

July 1st, 1840. Having now succeeded in the restoration of other cases of deformed feet re-

Fig. VII.

Fig. VIII.

quiring more difficult treatment, I again returned to my patient.

On the 3d of July, I applied an instrument similar to the first of those described in the introduction to this paper, (Fig. I,) and by the 10th, the foot was brought on a line with the leg. On the 12th, the apparatus for flexion, (Fig. II,) was adjusted, which brought the foot to the position as seen in Fig. VIII. in thirty-one days from the application of the first instrument.

Until the 15th of July, the foot was daily brought nearer to the desired position. Very little pain was experienced, no soreness was occasioned by the pressure, and the patient who is one of the most robust, obstinate, and restless of children, ran at large in the streets at will, during the whole treatment. An ordinary shoe was applied on the 12th of August.

This is the only instance of any deformity known to have occured in this family, either in the paternal or maternal branches, and no cause can be assigned for it by the parents.

Neither the tendons nor the fascia plantaris offer any resistance to the permanency of the foot as restored, nor do the tarsal or metatarsal bones exhibit that rigidity which so often limits motion, until a late period after the foot is brought to its natural shape.

The fooot in walking assumes its proper position, and the patient does not limp, or hesitate at all in his movements. The arch of the instep is not defective and all the varied motions, even including abduction, are performed as perfectly as upon the opposite side.

October 8th, 1840. Two weeks ago I called to ascertain the situation of my patient's foot, and found him in the street, bare-footed, and was told he had been without his shoes for three weeks, No relapse from the original restoration had followed, and on the 15th inst. I exhibited this case to my class in a lecture on deformities.

CASE IV. *Deformity of the Left Foot, not congenital, (Pes Equinus of the third degree, of six years' duration, combined with Partia Inversion of the front part of the foot,) restored in twenty-one days.*

The subject of this case, J. Arbuckle, ætat. eleven, was soon after birth observed, according to the statement of his parents, to have an unusual stiffness in the ankles, which, however, in his earlier years gave him no material inconvenience. He was remarkably healthy, very active, and walked at the usual age of childhood.

Occasionally, up to his fifth year, he complained of a pain in the hip for a short time. This difficulty never attracted the attention of his parents, particularly, until the foot was observed to turn gradually inward, and the heel to become elevated. Medical aid was then called. Bandages and splints were applied, but the deformity proving very obstinate, they were abandoned.

During the month of April of the present year, I saw the patient for the first time. There was, at this period, a partial inversion of the front part of the foot by rotation at the middle joint of the tarsus, while the distance from the toes to the heel was five and three-fourth inches; the direction of the foot being nearly perpendicular as seen in Fig. IX.

There was a want of development in the glutei muscles—the thigh, leg, and foot, were also smaller than those of the opposite side, and the whole foot was remarkably rigid. The tendo Achillis was very stiff, and the bones of the tarsus were prominent, as is seen in Fig. IX., and in short, the limb had undergone all the usual changes which take place, where it becomes necessary to sustain the weight of the body on the toes for a great length of time.

Fig. IX

Fig. X.

There was also a relaxation of the ligaments of the knee-joint, and while walking, the knee performed a peculiar rotatory motion outwards, which greatly retarded the patient's progress. These combined motions of the limb, together with the elevation of the foot, rendered it almost impossible for him to walk. He would frequently fall in the street, and after going a short distance, would suffer extreme pain in the foot and leg.

On the 11th of May, I applied to the outer side of the leg, the brass splint accurately moulded to the limb and the upper part of the external malleolus, extending from just below the knee to the last mentioned point.

After the application of this apparatus, the foot was drawn daily more and more toward the desired position, until, at the end of one week, it was brought into a direct line with the leg.

To fulfil the second indication—the flexion of the foot—the instrument represented in Fig. II. was applied. The apparatus was secured to the leg and foot, and bound firmly at the instep by means of the strap, (*f.*) The point of the sandal and the upper extremity of the splint at the knee, approximated daily by the aid of the two lateral straps connecting those points, until the 21st day after the second instrument was applied, when the foot was restored to its proper position.

After the first few days the patient was able to begin to walk, which accelerated the flexion.

The pain produced by these instruments throughout the whole operation was by no means worth regarding. The process of restoration was slow but constant, and the changes brought about so gradual, that not even an unpleasant sensation was experienced beyond an hour, at any one time during the treatment. Not the slightest inconvenience was felt in any of the tendons, not even in the tendo Achilis, duting the treatment, but the pain was confined to the outer side of the foot during the abduction, and to the instep during the flexion.

An abrasion of the skin took place and continued for a few days, being caused by frictions which were employed in aid of the treatment, but no such result was produced by the apparatus.

September 28th. There is still considerable rigidity in the instep. The motions of the foot are limited, and in walking, the rotatory motion of the knee is apparent. It is expected that support for the knee and continued exercise of the foot, will in time overcome these difficulties.

The condition of the foot, thirty days after the application of the first instrument, is shown in Fig. X.

This patient was seen, at different stages of the treatment, by Professor George McClellan, Drs. E. W. Leach, of Boston, Baldwin, of Georgia, and Drs. R. Coates, Brewer, and West, of this city.

CASE V. *Greatly distorted Foot, from exposure, which commenced in early life, restored in fifty-one days, by mechanical means alone.*

In the spring of 1840, my attention was called to Julia Dunmore, who was standing upon her crutches and on one foot, resting herself. The patient is now fourteen and a half years old, healthy, and as active as could possibly be expected, with the deformity under which she labours. She was a remarkably healthy and unusually active child—walked readily when nine months old—but at the age of a year and a half, she entirely lost the use of her limbs from exposure in a damp cellar, was placed under medical treatment, and recovered the motion of her extremities except that of her right foot, so far as to be able to walk in six months, with the aid of one crutch. She retained this power for some time, when it was observed that the hip was enlaging, and the leg growing shorter. A second crutch was then obtained, and the patient began to place the foot to the ground. The ankle was still however weak, but she continued to rest upon this as well as on the opposite leg, in walking. The ankle continued giving way, until the foot was brought to the position seen in Fig. XI. and thus she remained when she came under my care.

The whole limb was at that period much emaciated, measuring only five inches in circumference at the ankle, six and a half at the knee, and eight inches at the largest circumference of the thigh. The hip, and in fact the right side of the body, partook of the general emaciation.

She could stand, but she could not walk without her crutches, and she was so feeble in her limbs, that when she fell she was compelled to crawl upon her knees, until she met with something by which she could raise herself up. The use of the limb produced great fatigue in it.

It would seem almost impossible that a greater deformity, or one more difficult of restoration, could exist, than is here shown. The foot was completely reversed. The patient rested the limb on the instep, which had been so long accustomed to pressure, that an enormous cushion (see Fig. XI, *a*,) had been formed to protect the foot from the ill-directed pressure.

In the treatment of this case, the same principles were to be applied as in the foregoing. The foot was first to be brought to the same axis with the leg, after which, flexion was to be made.

Accordingly, on Saturday, the 22d of May, 1840, I applied the brass splint to the outer side of the leg, as described in the preceding case. By the aid of the strap around the foot, I drew it daily nearer the line with the leg, until the tenth day, when it was made to assume the position seen in Fig. XII.

On Monday, June 15th, I commenced flexion,

and succeeded at the end of fifty-one days, in bringing the foot to the position seen in Fig. XII.

The entire restitution of the natural position of this foot, was accomplished perhaps with less difficulty than would be presumed by observing it in its distorted state. This was owing to the relaxation of the ligaments, and the ease with which the bones moved upon each other.

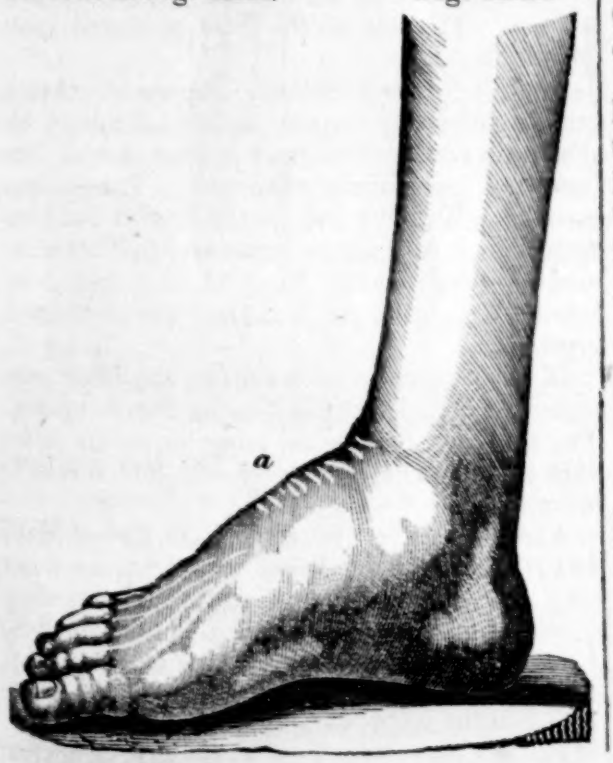
Fig XI.

Fig. XII.

In the restoration of the foot, the pain experienced was comparatively little. In both rotation and flexion of the foot, this sensation was principally confined to the osseous structure.

With some effort this patient could bring her heel to the floor on the 10th of July, and on the 13th she began walking for the first time, and on the 30th the foot exhibited the appearance seen in Fig. XIII.

Fig. XIII.



That part of the foot on which it rested during the greatest degree of deformity, is now seen at *a*.

By reference to this figure it will be observed, that the leg is thrown slightly backward upon the foot, in consequence of a loss of proper action in the tarsus. This action the patient will again recover.

This patient has been seen by Drs. R. Coates, West, and Brewer; Drs. E. W. Leach, of Boston, and Baldwin, of Georgia.

NOTE.—*October 17th*, 1840. This patient has gained the use of her foot at the instep, and the leg is thrown forward to the proper position. She can walk several squares without much fatigue, and the general appearance of the foot is much improved from that seen in Fig. XIII. She was examined by my class on the 15th inst.

CASE VI.—*Everted Deformed Foot; deformity commenced at two years of age, from paralysis; restoration in ninety days by mechanical means.*

During the month of February, 1840, Professors George and Samuel M'Clellan referred to my care Mr. J. B., aged twenty-five years, who was labouring under an everted deformed foot, as seen in Fig. XIV., the history of which, as given by the gentleman himself and his parents, is as follows:

He was a healthy, fat child, and walked readily at nine months old. At two years of

age he was suddenly seized with paralysis of the lower extremities, and spasm of the muscles of the back of the neck: his head was drawn far backward, and remained immovable for several weeks. He could not walk or sit without support, and both legs became entirely useless. This state of things was followed by several months of severe illness, when the left limb gradually recovered. At three and a half years of age he could climb up by a chair. At eight years old he could walk a short distance by the aid of two crutches, and continued in this situation for eight or ten years. He then walked four or five years with a crutch and a cane, and afterwards with a cane only.

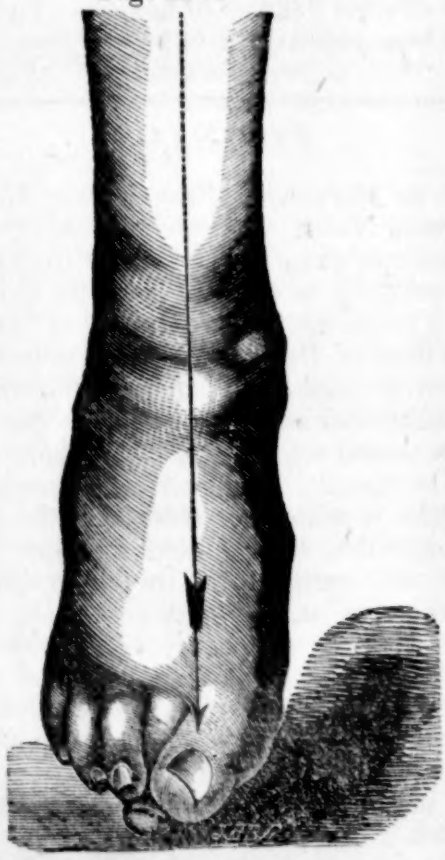
Neither of his ankles had entirely recovered from the paralysis when he began to bear his weight upon his feet; and as his general health improved, enabling him to take more exercise, his ankles, particularly the right one, gradually gave way, and assumed the appearance represented in the figure referred to.

The internal malleolus was very prominent, the bones of the instep rigid, the foot attenuated, and the leg and thigh much smaller than those of the opposite side. The left foot was also slightly everted. He had no control over his toes. In walking, the foot was thrown outward, resting upon the inner edge, and the internal malleolus came nearly to the ground. He suffered much pain in the ankle and leg in walking.

By considerable effort the foot could be brought inward nearly on a line with the leg, and in order to retain it permanently, a firm gaiter-boot was fitted to the foot and ankle. Two plates of steel were provided, three quarters of an inch wide, two lines in thickness, and attached at their upper extremities by means of a semicircular plate, designed to pass behind the leg near the kee. These were long enough to extend from the knee along each side of the leg to the bottom of the boot, beneath which they were bent and united by their extremities. Attached to the inner plate at the internal malleolus was a circular piece of steel plate three inches in diameter, about two lines in thickness at the circumference, and one-fourth of an inch at the centre. The whole being suitably padded was applied to the foot, and confined by straps passing round the leg.

Fig. XIV.

Fig. XV.



This boot and its appendages were worn for ninety days, when the foot assumed the position seen in Fig. XV.

The pressure at the internal malleolus by the circular steel plate was quite firm, and produced considerable pain in walking for the first few weeks. The rigidity of the ankle-bones limited the flexion of the foot for some time after it was brought to a line with the leg.

At this period, Sept 8th, the patient begins to enjoy the motions of the leg on the foot, and also to move his toes; the leg has increased one-fourth in size since the commencement of the treatment, and he is able to walk without any support, and without fatigue.

Drs. Bacon, Woodward, Smith, Morgan, Cogswell, and Ives of New England, are familiar with this case, and Professors Tully and Knight have examined the patient since his foot was restored—also the gentlemen who kindly referred him to my care.

Fig. XVI.

I have several patients under treatment for the cure of false anchylosis of the knee-joint, with different degrees of flexion. Three cases have been perfectly restored. Some of these deformities are of many years' standing. The results we propose to relate in a future number of this Journal.

FOREIGN.

On the Microscopic Constituents of Milk. By Professor NASSE, of Marburg.—After a careful microscopic examination of milk from pregnant and suckling women, as well as from a cow and a bitch, and a comparison of his results with those of Donné and other preceding observers, the author says that the following may be enumerated as the microscopic constituents of the normal secretion of the mammary gland: 1. The smooth, homogeneous, transparent oil-globules, to which, in addition to the common milk-globules, belong also the fine, scarcely measurable particles and the larger drops of oil which swim on the top of the milk. 2. The cream-globules which are distinguished from the oil-globules by their opacity and their facette-like aspect. 3. The granulated yellow corpuscles. 4. The lamella of epithelium. 5. The more or less turbid medium, in which the four preceding kinds of corpuscles are suspended.

The first, the common milk-globules, are composed entirely of fatty matter, which dissolves completely and rapidly in ether. No membrane can be seen investing them. In the first nine days after delivery, the largest globules measure 1-200th of a line in diameter, afterwards they are as much as 1-100th, but many are found of a much smaller size, and through all periods of lactation, the microscope, as well as other means of examination, show that the proportion of oil-globules in the milk varies greatly in different persons and under different circumstances.

In perfectly fresh warm woman's milk, no other globules than these are sometimes found. But as soon as the milk has stood for some time exposed to the air, other corpuscles are discernible in it which are distinguished from the preceding by a greater definiteness, a less degree of polish, and an appearance of facettes. In size they are nearly similar to the oil-globules, but if the milk be examined some time after it is drawn a number are found much larger; 1-50th of a line or even more in diameter. They are not so easily soluble in ether as the common milk-globules; they do not break up in drying, but they become clearer; acetic acid and ammonia have no influence upon them; they diminish for a time when the milk is boiled, but they re-appear gradually as it cools again; when left at rest they collect on the surface and form the cream; they easily stick together, and butter is formed when they are collected in one homogeneous mass. It is evident that they acquire their peculiar characters after they are drawn from the gland-ducts, for the author, as he watched them on the field of the microscope, could see individual globules which were originally clear, becoming on a sudden quite dark, and assuming the several characters of the cream-globules.

The yellow granulated corpuscles are almost peculiar to the colostrum; after the first few days from delivery, they cease to occur in the milk, and they disappear from it earlier in those who have borne several children than in primi-

paræ. They are not all spherical; the majority are flat. Their diameter is at most from 1-200th to 1-100th of a line; some are found measuring 1-50th in length and 1-75th in breadth. They consist of small clear globules of fatty matter, which are connected together by a firm cement which is unalterable by either ammonia or concentrated acetic acid, or by boiling. When the milk is left at rest, these globules collect on its surface; and when they exist in considerable numbers render it unfit for making butter. The author believes that they are not, like the preceding globules, formed by the action of the air, but that they are produced by the secreting surface of the gland-ducts, and are analogous to the mucus-cells which are cast off from the surfaces of many mucous membranes, and to which they are in many respects very similar.—*Brit. and For. Med. Rev., from Müller's Archiv.*, 1840. Heft iii., p. 258.

Effects of Over-eating. By Dr. Ritter.—A girl, three years old, went with her father to gather plums; as they fell from the trees she kept eating an enormous quantity of them, and then, feeling very thirsty, drank cold water from a spring close by. Soon after returning home, having seemed previously quite well, she suddenly fell down as if struck dead by lightning; her eyes were convulsively pulled about, and she lay quite senseless. The author being immediately sent for found her with her eyes staring wildly, unconscious, insensible, and speechless; her pulse was suppressed, scarcely perceptible, and small; her respiration short and quick, frequently interrupted by sighing, and her face pale. The precordial region was distended and very tense. An emetic, containing one-eighth of a drachm of vinum antimonii, and one-eighth of a grain of tartar emetic, was immediately given, and was repeated every five minutes, but after several doses produced no effect. Three powders were then given at intervals of ten minutes, each of which contained a grain of tartar emetic, and six grains of ipecacuanha, but these excited only retching; vomiting was at last brought on by tickling the pharynx with a feather. The materials discharged consisted of a huge mass of tough, half-digested plums, with some frothy fluid. The severest convulsions now ensued, especially on the right side of the body. The eyes rolled irregularly and convulsively in their orbits; the mouth was drawn over to the right side, and watery froth kept running from it; the right arm and foot were set into a constant swinging motion, the face was earthy, the glance oblique, and the nose pointed; in short, there were all the appearances of closely impending death. Some strong coffee, and some wine and water were given, but the convulsions still continued. A mixture of equal parts of castor oil and almond oil was next prescribed, and a spoonful of it was given every ten minutes; clysters, containing oil, vinegar, and salt, were also administered. Soon after the second of these, borborygmi commenced, and were presently followed by the discharge of an enormous mass of half-digested plums, which was again repeated for several times. The child not long after came to herself again, and though weak was still free from apparent danger. She slept well during the night, and next morning, with the exception of dulness and repeated diarrhœa, was well and in good spirits.—*Ibid., from Medicinische Zeitung.*

DOMESTIC.

HEALTH OF THE CITY.

Interments *in the City and Liberties of Philadelphia, from the 27th of February to the 6th of March*, 1841.

Diseases.	Adults.	Children.	Diseases.	Adults.	
Apoplexy,	1	0	*Brought forward*,	33	55
Burns,	2	0	Measles,	0	5
Casualty,	0	1	Old age,	1	0
Croup,	0	4	Œdema of lungs,	1	0
Congestion,	0	1	Palsy,	1	0
—— of brain,	0	1	Rupture of a blood-vessel,	1	0
Consumption of the lungs,	10	1	Strangulation,	1	0
Convulsions,	2	4	Small pox,	1	3
Dropsy of head,	0	5	Still-born,	0	8
Dis'se of the brain,	0	1	Spitting of blood,	0	1
—— heart,	1	0	Unknown,	0	1
—— lungs,	0	2			
Dysentery,	1	0	Total,	112—39	73
Debility,	1	4			
Epilepsy,	1	1	Of the above, there were under 1 year		39
Fever, typhus,	2	0	From 1 to 2		15
—— typhoid,	2	0	2 to 5		9
—— puerperal,	1	0	5 to 10		6
—— scarlet,	0	2	10 to 15		3
Inflammation of the brain,	0	3	15 to 20		0
—— bronchi,	2	8	20 to 30		12
—— lungs,	4	10	30 to 40		8
—— breast,	0	2	40 to 50		5
—— heart,	1	0	50 to 60		8
—— peritonæum,	1	0	60 to 70		4
Influenza,	1	0	70 to 80		1
Inanition,	0	2	80 to 90		2
Marasmus,	0	2	90 to 100		0
Carried forward,	33	55	Total,		112

In the above are included 23 people of colour, 4 interments from the alms-house, and 1 from the country.